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KEY AND DESCRIPTIONS FOR THE SEPARATION AND DETERMINATION OF THE FIRST INSTAR STEM MOTHERS OF THE THREE SPECIES OF APHIDS MOST COMMONLY ATTACKING THE CULTIVATED APPLE.

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The following key and detailed descriptions were prepared in the spring of 1916, in Blacksburg, Va., while the writer was connected with the Virginia State Crop Pest Commission, and were to form part of a more extended paper, but as the publication of the latter has been delayed, these are submitted separately in the hope that they will prove of aid to those not yet familiar with the young stem mothers of the above three species of aphids.

KEY.¹

Cornicles long (about $\frac{1}{6}$ to $\frac{1}{10}$ of length of insect). Fig. 1, B.

(Base of distal segment of antennæ distinctly shorter than the flagellum or unguis or distinctly less than one-half the total length of the segment.) Fig. 1, A.....1. *Aphis malifolia* Fitch (*Aphis sorbi* Kalt. of recent American authors).

Cornicles short or very short (longest about of the length of an abdominal segment). Figs. 2 and 3, B.

Base of distal segment of antennæ as long or nearly as long as the unguis or equal or nearly equal to one-half the total length of the segment; cornicles about as long as an abdominal segment. Fig. 2, A and B.....2. *Aphis pomi* DeG.

Base of distal segment of antennæ distinctly shorter than the unguis or less than one-half the total length of the segment; cornicles tuberculiform. Fig. 3, A and B....3. *Aphis prunifolia* Fitch (*Aphis avenæ* Fab. of recent American authors).

¹The characters utilized here, as well as most of those embodied in the descriptions, can be made out by means of a hand lens or binocular microscope. The figures were drawn from balsam mounts.

DESCRIPTIONS.

1. *A. malifoliæ* Fitch (Rosy Apple Aphis).

Light to dark green, anterior portion of thorax (first two segments as a rule) usually lighter (light green may have a yellowish tint); anterior and dorsal aspects of head, antennæ, base and nearly $\frac{1}{2}$ distal portion of rostrum, legs, apices of cornicles, and as a rule two transverse bands or lines at anal end of dorsum, dusky to black; the remainder of cornicles often dusky or brownish; eyes dull black (in balsam-mounted specimens deep red); as a rule a pale median longitudinal line on dorsum of head; often a small dusky median spot on the first thoracic segment (in good light seen to be interrupted medianly and longitudinally) and one on each side of the thoracic segments; caudal end of abdomen ventrally dusky sometimes; dorsum of head and thorax and the whole of the ventral surface of the insect more or less pulverulent. Newly-hatched specimens are light green as a rule, with head, thorax, and posterior portion of abdomen at sides, occasionally, pale yellowish-green; appendages similar to head and thorax, although the antennæ and legs are more often almost colorless; eyes deep red.

Antennæ comparatively long and varying in extent from end of thorax nearly to bases of cornicles, unguis about twice as long as base of distal segment, segments as follows: III .1155-.1386 mm., IV (base) .0539-.0616 mm., IV (unguis) .1001-.1309 mm., III with a distal sensorium and base of IV with a distal group composed of one large one and several smaller ones, III and IV imbricated but III not as strongly, III sometimes showing faint line of differentiation of future segments III and IV, the whole with a few short spinelike hairs; cornicles long .0770-.0847 mm., broad, cylindrical or subcylindrical (in some balsam-mounted specimens distinctly tapering), flanged at apices, often in part weakly imbricated.

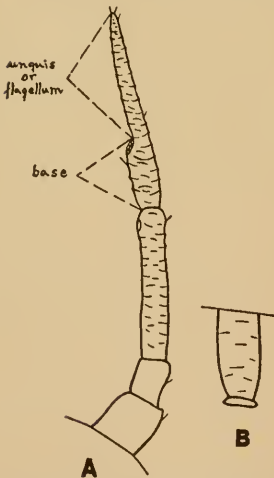


Fig. 1.—Antenna and cornicle of *Aphis malifoliæ* Fitch. about $\times 150$.

cated, and varying in extent from beyond end of body to somewhat short of end of same; rostrum varying in extent from nearly to end of body to about metacoxa (relative length varying, like that of antennæ and cornicles, with the state of advancement of the insect—relatively shorter with feeding and consequent enlargement of body); legs armed with spinelike hairs, anterior tibiæ .1540–.1848 mm., intermediate tibiæ .1617–.1925 mm., metatibiæ .2002–.2464 mm.; anterior tangent of head usually faintly trilobed; eyes somewhat large; usually a pair of minute tubercles on each of last two segments (within transverse dusky lines or bands), and very often apparently a median double row of very minute tubercles or dots on remainder of dorsum, a pair on each segment; length of body .4620–.8316 mm., width at widest part .2464–.4312 mm.

2. *A. pomi* DeG. (Green Apple Aphis).

Dark green (well fed individuals may be lighter), anterior and dorsal aspects of head dusky to blackish with a pale or uncolored median longitudinal, often quite wide, band or stripe (when latter condition obtains the dark or dusky portion appears as two elongate spots); antennæ, base of rostrum, and legs dusky, tips of femora, distal portions of tibiæ, and tarsi quite often blackish; more or less of cornicles, and about $\frac{1}{3}$ distal portion of rostrum black or blackish; eyes black (in mounted specimens deep red); caudal end of abdomen ventrally sometimes faintly dusky; whole insect often slightly pruinose. Newly-hatched specimens are bright dark green, with head and more or less of anterior portion of thorax as a rule lighter and usually with a yellowish tint; antennæ, rostrum, and legs with a cast of the color of the body, tips of femora and of tarsi and distal portions of some of the antennal segments very often darker green; femora usually distinctly yellow-green.

Antennæ reaching from end of second segment to end of thorax, base and unguis of last segment equal or subequal (the inequality is slight when the specimen is not too highly

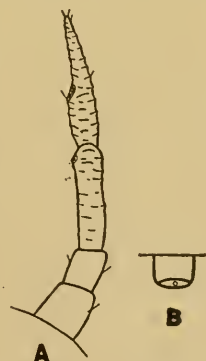


Fig. 2. — Antenna and cornicle of *Aphis pomi* DeG., about $\times 150$.

magnified), segments as follows: III .0924-.1001 mm., IV (base) .0462-.0539 mm., IV (unguis) .0539-.0616 mm., III with a distal sensorium and base of IV with a distal group composed of one large one and several smaller ones, III as a rule imbricated but not as strongly as IV, the whole with a few short spinelike hairs; cornicles short, .0231 mm., broad, cylindrical or very nearly so, and rounded at distal end; rostrum reaching to or extending somewhat beyond metacoxa (varying in extent like antennæ, with feeding, as in *malifolia*); legs armed with spinelike hairs, anterior tibiæ .1463-.1771 mm., intermediate tibiæ .1617-.2079, metatibiæ .1925-.2387 mm.; prothoracic and first and last pairs of abdominal lateral tubercles comparatively prominent and the last abdominal pair usually quite conspicuous—(all lose in conspicuousness as the insect body enlarges, but under higher magnification the last abdominal pair is quite easily made out in live specimens which have not fed too far, and is a very good distinguishing character); length of body .5236-.8162 mm., width at widest part .2772-.4004 mm.

3. *A. prunifoliæ* Fitch (Apple-Grain Aphis).

Dull light green or dull dark green, anterior and dorsal aspects of head dusky to blackish and very often with a pale or uncolored median longitudinal line; antennæ, base of rostrum, caudal end of abdomen ventrally, and legs dusky—distal portions of femora, tibiæ, and of tarsi may be still darker; cornicles and about $\frac{1}{3}$ distal portion of rostrum black or blackish; eyes black (in mounted specimens deep red). Newly-hatched specimens are light green, with head and thorax (at least first two segments) still lighter or pale yellow-green; appendages with a cast of the color of the body, although practically colorless in part sometimes; femora usually yellow-green.

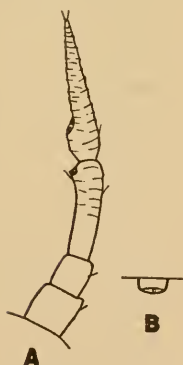


Fig. 3.—Antenna and cornicle of *Aphis prunifoliæ* Fitch, about $\times 150$.

Antennæ stoutish, reaching to about end of thorax and “shortening up” somewhat with feeding, flagellum or unguis about twice as long as base, segments as follows: III .0924-.1001 mm., IV (base) .0385-.0462 mm., IV (unguis) .0847-.1001 mm., III with a distal sensorium and base of IV with a distal group composed

of one large one and several smaller ones, IV imbricated and III as a rule in part faintly, the whole with a few spinelike hairs; cornicles very short, tuberculiform; rostrum reaching from somewhat beyond metacoxa nearly to end of body (relative length, like that of antennæ, varying as in the other two species); legs stoutish and armed with spinelike hairs, anterior tibiæ .1540-.1925 mm., intermediate tibiæ .1694-.2079 mm., metatibiæ .2156-.2387 mm.; length of body .4620-.8470 mm., width across widest part .2618-.4004 mm.

A. prunifolia is the first of the three to begin hatching, and in Virginia it may begin as early as the middle of March. The other two follow in about ten days to two weeks.

MYRIAPODS FROM NASHVILLE, TENNESSEE.

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The myriapods listed below are represented in a collection made by Mr. Harold Cummins of Vanderbilt University in and near Nashville and by him kindly sent to me for study. The collection is interesting particularly because it includes numerous well preserved specimens of a new diplopod genus of the family Nannolenidæ. Three other forms represent new species, two of *Fontaria* and one of *Parajulus*. There is a total of twenty-five species.

CHILOPODA.

1. *Geophilus mordax* Meinert.

Two specimens taken in the Glendale Hills south of Nashville, one on Oct. 14, 1916, and one in March, 1917.

2. *Arenophilus bipuncticeps* (Wood).

One specimen labeled as found on "Nolensville Pike, Nashville, Feb. 25, 1917," and another labeled "Nashville, Nov., 1917."

3. *Gnathomerium umbraticum* (McNeill).

One specimen taken in the Glendale Hills in April, 1917.

4. *Theatops posticus* (Say).

Glendale Hills. One specimen taken May, 1917, and one March 25, 1917.